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**BEFORE THE**

# Federal Communications Commission

**WASHINGTON, D.C. 20554**



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| In the Matter of | ) | |
| | ) | |
| Amendment of the Commission's Rules | ) | ET Dkt. No. 98-237 |
| With Regard to the 3650-3700 MHz | ) | |
| Government Transfer Band | ) | |

To: The Commission

## JOINT COMMENTS OF TRW INC. AND LOCKHEED MARTIN CORPORATION

TRW Inc. ("TRW"), by counsel, and Lockheed Martin Corporation ("Lockheed Martin") hereby comment, pursuant to Sections 1.415 and 1.419 of the Commission's rules, upon the Notice of Proposed Rule Making ("*NPRM*") released in the above-captioned docket.[1/] TRW and Lockheed Martin are each concerned that the *NPRM* fails to take into account the already pending rulemaking, initiated by the 1997 filing of a Petition for Rule Making by a coalition of Ka-band satellite licensees, that includes a proposal to use the same band, 3650-3700 MHz, for satellite tracking, telemetry and control ("TT&C") gateway links for satellite systems in bands above 15 GHz.[2/] Use of this band for TT&C links is already contemplated by a substantial

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1/ *See Amendment of the Commission's Rules with Regard to the 3650-3700 MHz Government Transfer Band*, ET Dkt. No. 98-237, FCC 98-337, slip op. (released December 18, 1998).

2/ Lockheed Martin was one of the nine petitioners. Both TRW and Lockheed Martin filed (continued...)

number of system licensees and applicants for FSS systems operating above the Ku-band, including TRW and Lockheed Martin.

TRW sought authority in 1997 to launch and operate the Global EHF Satellite Network ("GESN"), a satellite system that would operate above the Ku-band in both the Ka-band FSS frequencies at 30/20 GHz and the Q- and V-bands at 48/38 GHz ("EHF Bands").[3/] The GESN system will provide global coverage via four geostationary satellites operating in conjunction with a non-geostationary component consisting of fifteen satellites in three orbital planes. In its GESN Application, TRW has proposed to operate transfer orbit TT&C and emergency satellite recovery links for both is geostationary and nongeostationary systems in extended C-band frequencies, including the frequencies that are subject of RM-9411.

Lockheed Martin's proposed Astrolink system, licensed in May, 1997, consists of nine geosynchronous satellites providing global coverage in the Ka-band from five orbital locations.[4/] On December 22, 1997 Lockheed Martin filed an application for modification of its Astrolink license seeking authorization, among other things, to conduct TT&C operations in the

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[2/](...continued)
supporting comments in response to the petition. *See* Comments of TRW and Comments of Lockheed Martin Corporation, RM-9411 (filed December 23, 1998).

[3/] *See* TRW Global EHF Satellite Network Application, filed September 4, 1997, and Amendment, filed December 22, 1997 ("GESN Application").

[4/] *See Lockheed Martin Corporation*, DA 97-973, File Nos. 182 through 186-SAT-P/LA-95 (released May 9, 1997).

extended C-band.[5/] Lockheed Martin also has three other pending satellite applications that propose certain TT&C operations in the extended C band.[6/]

In addition to the authorization held by Lockheed Martin and the applications filed by both Lockheed Martin and TRW, there are at least a dozen other satellite system applications, geostationary and nongeostationary, currently pending in the Ka-band and EHF bands, as well as approximately a dozen licensed Ka-band FSS systems. Many of those systems will require C-band TT&C spectrum, at least for transfer orbit and recovery mode operations.

Despite the existence of dozens of authorized FSS systems and FSS system proposals potentially desiring to use extended C-band frequencies for TT&C, the Commission has proposed in the *NPRM,* absent a request from any petitioning party, to allocate the 3650-3700 MHz band on a co-primary basis to the fixed service for purposes including Fixed Wireless Access.[7/] At the same time, it states that it will no longer accept applications for use of this band

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5/ *See* Lockheed Martin Corporation Application for Authority to Modify Its Authorization for a Global Ka-band Satellite Communications System in Geostationary Orbit, File No. 35-SAT-MP/ML-98 (filed December 22, 1997).

6/ *See* Application of Lockheed Martin Corporation to Launch and Operate a Global Q/V Band Satellite Communications System in Geostationary Orbit, FCC File Nos. 129 through 137-SAT-P/LA-97 (filed September 25, 1997); Application of Lockheed Martin Corporation for Authority to Launch and Operate a Global Ka-Band Satellite Communications System in Geostationary Orbit (Astrolink- Phase II), FCC File Nos. 39 through 43-SAT-P/LA-98 (filed December 22, 1997); Lockheed Martin Corporation Application for Authority to Launch and Operate a Hybrid Ka-band/V-band Satellite Communications System in Non-Geostationary Orbit (LM-MEO System), File No. 51-SAT-P/LA-98 (32) (filed December 22, 1997) (TT&C during launch, early orbit and emergency operations only).

7/ Fixed Wireless Access is described as "the connection between User Network Interface (continued...)

"by new or major modified earth station facilities in the fixed-satellite service" after the release date of the *NPRM*.[8/] No mention whatsoever is made in the *NPRM* of the petition in RM-9411, the existing Ka-band FSS authorizations, or the pending Ka-band and EHF band applications.

In the view of TRW and Lockheed Martin, the Commission's proposal in this docket, as presently structured, is fundamentally inconsistent with the necessary spectrum use proposed by the Ka-band licensees and applicants and the EHF band applicants, as well as with the rulemaking petition in RM-9411, initially submitted to the Commission eighteen months ago, the comments filed in response to the petition when it was placed on Public Notice late last year, and U.S initiatives in the preparatory process for the 2000 World Radiocommunication Conference.[9/] Indeed, as the Commission acknowledges in the *NPRM*, its own March 1996 *Plan for Reallocated Spectrum* identified the 3650 - 3700 MHz band as a candidate band for increased use by non-Government FSS systems.[10/] The Commission specifically noted in that 1996 report

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[7/](...continued)
and the PSTN Local Exchange Service Node Interface," *i.e.*, "last-mile" facilities, for provision of voice telephony, high-speed data and video services. *See NPRM*, FCC 98-337, slip op. at 1-2 (¶ 1) and n.3.

[8/] *Id.* at 2 (¶ 2) and 11 (¶ 13).

[9/] The U.S. sought inclusion of the issue of spectrum for FSS TT&C on the WRC-2000 agenda, explaining that less favorable propagation characteristics in higher frequency bands give rise to a need for allocations in lower frequency bands for TT&C.

[10/] *See Plan for Reallocated Spectrum*, 11 FCC Rcd 17841, 17871 (¶ 54) (1996) ("*Band Reallocation Plan*").

that an application had been filed by Directsat, Inc. proposing to utilize these frequencies for TT&C for a direct broadcast satellite.[11/]

Moreover, limitation of FSS earth stations in this band to currently authorized incumbents would undercut international actions that the U.S. has already taken to secure access to these bands for use in conjunction with the various Ka-band and EHF band systems. The Commission has filed both advance publication and coordination materials with the International Telecommunication Union ("ITU") that state the intent of the United States to use of the extended C-band spectrum in the range 3650-3700 MHz to satisfy TT&C requirements for both GSO and NGSO satellites in the Ka- band and EHF band. This band was the only portion of the extended C-band downlink advance published by the U.S. for commercial Ka- and EHF-band systems.

As a result, if the Commission formalizes its present proposal to prohibit new satellite earth station authorizations for the 3650 - 3700 MHz band, all of these filings with the ITU would likely require new advance publications to accommodate TT&C for FSS systems above the Ku-band. Such a result would have multiple adverse consequences for the dozens of affected U.S. satellite networks and systems. First, any date priority over foreign systems that the current filings have at C-band would be surrendered. This could be a significant competitive setback, and could also delay the initiation of service by these systems, as a move to new

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11/ *Id.*

spectrum could very well result in coordination and implementation difficulties that cannot now be gauged.

Second, cost recovery for satellite system registrations has been adopted by the ITU as a means of allocating to administrations and individual system operators the direct costs that the Radiocommunication Sector of the ITU ("ITU-R") incurs in processing advance publications, coordination requests, notifications, or other registrations associated with new space networks. Cost recovery applies to every advance publication submitted to the ITU-R after November 6, 1998. As a result, if the instant proposal to remove the band 3650 - 3700 MHz from satellite use were adopted, it is probable that the U.S. companies that initiated advance publication and coordination requests for TT&C in the extended C-band -- all of which were in place by November 1998 -- would be forced to incur substantial additional costs if new advance publications are needed to secure replacement spectrum. How substantial these costs will be has not yet been determined, as the ITU is now in the process of calculating the costs associated with various filings and formulating a methodology for assessing these costs upon individual filers.

The cost-recovery morass is a difficulty that Ka-band and EHF band licensees and applicants worked closely with the Commission to avoid. The Commission's approach in this proceeding could thrust all of those systems into the middle of the as-yet unresolved issues on cost-recovery and its implementation. Given the number of systems involved, the overall impact could be very significant, and the uncertainties caused by the unnecessary triggering of ITU cost recovery obligations would not be welcome.

Finally, TRW and Lockheed Martin believe that the potential use of the 3650-3700 MHz band for FWA is not inherently incompatible with FSS use — it is merely the Commission's notion of a ban on future FSS earth station licensing in this band that must clearly be rejected. For example, the nature of TT&C downlinks is such that only a relatively small number of rather widely dispersed earth station facilities will be necessary to implement the use proposed by the licensed FSS systems and system applicants. It may therefore be possible for the Commission to derive limits or coordination approaches for the 3650-3700 MHz band that would apply to terrestrial and/or satellite users and enable certain types of wireless and satellite applications to co-exist. At a minimum, the Commission should undertake a careful examination of the prospects for co-frequency use by FSS and FWA facilities as part of this proceeding.

Under these circumstances, TRW and Lockheed Martin believe that the Commission's decision to adopt a preemptive and total freeze on earth station applications for the band is extreme, as well as prejudicial to the outcome of any forthcoming technical compatibility inquiries. Instead of acting to foreclose future FSS use of this band, the Commission should take steps to provide sufficient spectrum to accommodate FSS TT&C in the extended C-band frequencies, as proposed both in RM-9411 and in the Commission's 1996 *Band Reallocation Plan*.[12/] Indeed, that proceeding should be consolidated with this one, and the course of this

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12/ *Band Reallocation Plan*, 11 FCC Rcd at 17871 (¶ 54).

docket should be redirected toward ensuring that FSS TT&C, as well as FWA, is provided with spectrum that is adequate to promote successful development and operation of FSS systems.

Respectfully submitted,

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